SWISHER
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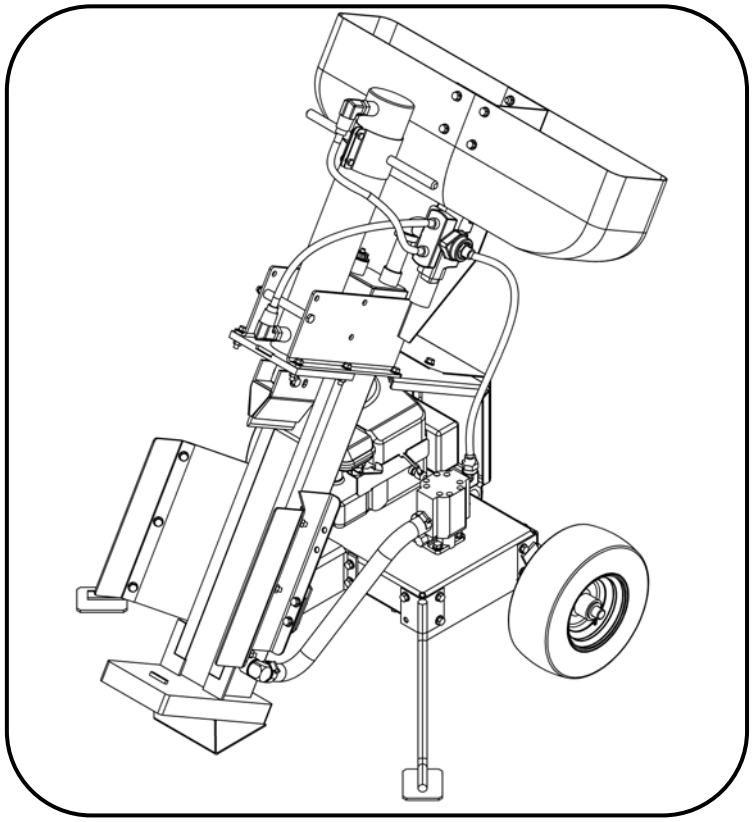
swisherinc.com

OWNER'S MANUAL

MODEL NO. LS412EC

STARTING SERIAL #: L108-352001



LOG SPLITTER

Safety
Assembly
Operation
Service and Adjustment
Repair Parts

IMPORTANT

Read and follow all Safety Precautions and Instructions before operating this equipment.

Rev. 08-352

1602 CORPORATE DRIVE, WARRENSBURG, MISSOURI 64093 PHONE 660-747-8183
FAX 660-747-8650

Made In The USA

Manufacturing quality lawn care equipment since 1945

15801
Rev 08-256

LIMITED WARRANTY

The manufacturer's warranty to the original consumer purchaser is: This product is free from defects in materials and workmanship for a period of ONE (1) year from the date of purchase by the original consumer purchaser. We will repair or replace, at our discretion, parts found to be defective due to materials or workmanship. This warranty is subject to the following limitations and exclusions:

1)	Engine Warranty	All engines utilized on our products have a separate warranty extended to them by the individual engine manufacturer. Any engine service difficulty is the responsibility of the engine manufacturer and in no way is Swisher Mower Co., Inc. or its agents responsible for the engine warranty. The Briggs & Stratton Engine Service Hot-Line is 1-800-233-3723.
2)	Commercial Use	The warranty period for any product used for commercial or rental is limited to ninety (90) days from the date of original purchase.
3)	Limitation	This warranty applies only to products which have been properly assembled, adjusted, and operated in accordance with the instructions contained within this manual. This warranty does not apply to any product of Swisher Mower Co., Inc., that has been subject to alteration, misuse, abuse, improper assembly or installation, shipping damage, or to normal wear of product.
4)	Exclusions	Excluded from this warranty are normal wear, normal adjustments, and normal maintenance. The pump, valve, and cylinder each carry separate manufacture's warranties. The valve and cylinder both carry a one (1) year limited warranty. The pump carries a two (2) year limited warranty.

In the event you have a claim under this warranty, you must return the product to an authorized service dealer. All transportation charges, damage, or loss incurred during transportation of parts submitted for replacement or repair under this warranty shall be borne by the purchaser. Should you have any questions concerning this warranty, please contact us toll-free at 1-800-222-8183. The model number, serial number, date of purchase, and the name of the authorized Swisher dealer from whom you purchased the splitter will be needed before any warranty claim can be processed.

THIS WARRANTY DOES NOT APPLY TO ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES AND ANY IMPLIED WARRANTIES ARE LIMITED TO THE SAME TIME PERIODS STATED HEREIN FOR ALL EXPRESSED WARRANTIES. Some states do not allow the limitation of consequential damages or limitations on how long an implied warranty may last, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may have other rights, which vary from state-to-state. This is a limited warranty as defined by the Magnuson-Moss Act of 1975.

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SAFETY PRECAUTIONS

This Safety Alert Symbol indicates important messages in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury.

Read this manual completely. This machine can amputate hands, feet, and throw objects. Failure to observe the following safety instructions could result in serious injury or death.

WARNING: The engine exhaust from this product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

DANGER: Your log splitter was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. If you violate any of these rules, you may cause serious injury to yourself or others.

- Read and understand the manual. Learn to operate this equipment in a safe manner. Familiarize yourself with all of the controls in a safe environment before starting to work with this machine. Seek appropriate training and instruction for the correct operation of this machinery.

- DO NOT under any circumstances alter this log splitter. This equipment was designed and engineered in accordance with operating instructions. Altering this equipment, or using this equipment in such a way as to circumvent its design capabilities and capacities, could result in serious injury or fatality and WILL VOID THE WARRANTY.

- Allow ONLY responsible adults who have read this manual to operate this machine. NEVER allow children to operate this machine. This machine is designated for a one person operation.

- NEVER operate or allow someone to operate this equipment while under the influence of alcohol, drugs or medication. Being coherent is essential for safety.

- ALWAYS use outdoors with adequate ventilation. DON'T run the engine in an enclosed area. Exhaust gases contain carbon monoxide. This odorless gas can be deadly when inhaled.

- NEVER use splitter for any other purpose than splitting wood. Any other use can result in injury. Your splitter is a precision piece of power equipment, not a toy. Therefore, exercise extreme caution at all times.

- ONLY a single operator is to load and operate the log splitter. KEEP all others, including pets and children, a minimum of 20 feet (6.1 meters) away from your work area. More accidents occur when more than one person operates the log splitter than any other time.

- ALWAYS wear protective gear such as safety goggles, protective hearing device, steel-toed shoes, and tight-fitting gloves without drawstrings or loose cuffs.

- NEVER wear loose clothing or jewelry that can be caught by moving parts of the splitter and pull you into it. Keep hair away from moving parts.

- NEVER operate your splitter on wet, muddy, or icy surfaces. KEEP work area clean of split wood. Safe footing is essential in preventing accidents.

- ONLY operate splitter on level ground with wheels blocked, not on the side of a hill. It could tip, or rolling logs, poor footing, etc. could cause an accident.

- NEVER operate your splitter near a flame or spark. Hydraulic oil and gasoline are flammable and can explode.

- NEVER fill gas tank while the engine is hot or running. Allow the engine to cool before refueling.

- This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used it should be maintained in effective working order by the operator.

-NOTE-

In the state of California, the above is required by law (Section 442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. A spark arrester muffler (optional by manufacturer) is available at your nearest engine dealer. Check legal requirements in your area.

- ONLY use your hands to operate the control lever. NEVER use foot, knee, rope or any extension device.

- Split ONLY one log at a time. NEVER attempt to split two logs on top of each other.

- NEVER place hands or feet between log and splitting wedge or between log and ram during forward or reverse stroke. ALWAYS keep fingers clear of splits that open in log during splitting operation.

- DO NOT straddle or reach across the splitting area while operating the splitter.

- DO NOT step over splitter when the engine is running. You may trip or accidentally activate the splitting wedge. Walk around to get to the other side.

- NEVER attempt to load splitter while splitting wedge is in motion. When loading log splitter, place hands on the sides of the log, not the ends.

- NEVER attempt to split woods across the grain. Wood may burst or fly out of your splitter and result in serious injury. Be aware of different characteristics of wood when being split (e.g. knots, irregular shapes) as they may create jams or projectile hazards.

- NEVER leave your splitter unattended with the engine running. Shut off the engine if you are leaving your splitter, even for a short period of time. Someone could accidentally activate the ram and be injured.

- Both ends of the log should be cut as squarely as possible to prevent the log from sliding out of the splitter during operation. Log length should be kept to 19"(48.2cm) with a Dia. of 15"(38.1cm) or less.

- NEVER allow persons to ride on splitter. DO NOT carry any cargo or wood on your splitter. It may fall off and cause an accident.

- DO NOT loosen or remove any hydraulic fitting, line or reservoir cap while your splitter or engine is running.

- Fluid escaping from a very small hole can almost be invisible. DO NOT check for leaks with your hand. See maintenance section for instructions. **IF injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.**

- DO NOT operate your splitter in poor mechanical condition or when it is need of repair.

- ALWAYS disconnect the spark plug wire and place the wire where it cannot contact the spark plug, to prevent accidental starting the engine when setting up, transporting, adjusting or repairing.

- Before starting work, all hydraulic pipes and hoses shall be inspected and the stopping devices shall be tested.

- Before each use, extend the cylinder all the way down and back up to ensure proper orientation of machine.

- Turn off the machine and unplug the sparkplug before cleaning or making any adjustments.

- Maximum permissible hydraulic oil operating pressure is: 3500psi(241.37BAR).

ASSEMBLY

This log splitter has been partially assembled at the factory. Refer to the drawings and part lists should it become necessary to disassemble the unit for repair or replacement of parts.

Inspect all components for damage. If you believe you have a damaged part please contact customer service immediately at 1-800-222-8183.

WARNING: Exercise extreme caution, as parts are very heavy. Sufficient persons or mechanical handling equipment should be used.

Refer to uncrating and assembly instructions for assembly procedures.

OPERATION

INTENDED USE: This log splitter is intended and designed to only split wood. NEVER use for any other purposes. Doing so can cause injury or VOID THE WARRANTY.

IMPORTANT: This unit is shipped with oil but without gasoline in the engine. After assembly, see separate Engine Manual for proper fuel and oil recommendations.

WARNING: *DO NOT START OR RUN THE LOG SPLITTER WITHOUT OIL IN THE ENGINE AND HYDRAULIC RESERVOIR.*

FILLING THE HYDRAULIC RESERVOIR

Fill the hydraulic reservoir with approximately 6 Quarts (5.68L) of Dexron II Automatic Transmission fluid and AW-32 hydraulic oil, or equivalent. After the hydraulic reservoir and the engine crankcase are filled correctly with their respective oils, start the engine. Remember to set the throttle and open the fuel shut-off valve. The hydraulic pump should prime itself. With the engine running, move the hydraulic valve lever to extend the wedge. This will cause the cylinder to expel air. When the cylinder is fully extended, retract it. Repeat this procedure several times. (An erratic movement of the cylinder indicates that there is air in the system, this is normal). Once the cylinder has a smooth and constant speed indicating that all air has been expelled, add another 2 Quarts (1.9L) of oil. Fluid level should be maintained approximately 3" (7.6cm) below the fill hole and above the flat on the dipstick. This model requires approx. 9-10 Quarts (8.5-9.5L) of hydraulic fluid.

NOTE: If the tank is overfilled, it will tend to expel oil from the breather cap when the cylinder is retracted.

START UP

WARNING: ***DO NOT START OR RUN THE LOG SPLITTER WITHOUT OIL IN THE ENGINE AND HYDRAULIC RESERVOIR.***

See separate Engine Manual for fuel and oil recommendations. If applicable your log splitter has come equipped with a fuel shut-off valve for towing purposes.
Before starting engine make sure crankcase is filled correctly with oil and the proper fuel has been used. The engine will only start when the throttle lever and fuel shut-off valve if applicable are turned to their ON positions.

STARTING INSTRUCTIONS

Briggs & Stratton Engine

1. Move throttle control to "FAST."
2. Push primer bulb three (3) times. NOTE: Do not use primer to restart a warm engine after a short shutdown.
3. Grasp rope handle and pull out slowly until resistance it felt. Then pull rapidly with a full arm stroke. NOTE: If engine fails to start after three (3) pulls, repeat steps 1 and 2.
4. When Engine starts, leave throttle control at "FAST." The throttle must be set in the fast position for maximum performance.
5. To stop engine, move throttle lever to "SLOW" for a few seconds then to "STOP."

COLD WEATHER START UP

The Cold Weather Clutch enables the engine to be started without having to pull through cold, thickened hydraulic fluid. Simply pull the handle out into locked position. Start engine, let it warm up, and release Cold Weather Clutch. After starting, assure that the lever has reengaged.

SPLITTER OPERATION

1. Set up the log splitter in a clear, level area that is completely free of obstruction and block the wheels. The suction port on the tank should always be on the lower side of the log splitter.
2. Place a log on the beam, against the foot plate. Make sure the log is securely on the foot plate and up against the beam.
3. Operate the valve levers so that the cylinder will drive the push wedge into the log. Extend the cylinder until the log splits or to the end of its stroke. If the log has not completely split after the cylinder has reached the end of its extension, retract the cylinder. NOTE: Leaving the valve in the "actuate" position at the end of the stroke may damage the pump. Always use extra care when splitting logs with ends that are not square.
4. In the event of a log jamming on the wedge, do not attempt to pry the log off using your hands or any other part of your body while the hydraulics are engaged. Instead, after disengaging the hydraulics and shutting off the machine, use a maul or other hammering device to force the log off of the wedge.

NOTE: To extend the life of the hydraulic cylinder, avoid "BOTTOMING OUT" the cylinder.

HYDRAULIC SAFETY

The hydraulic system on your splitter requires careful inspection along with the mechanical parts. Be sure to replace any frayed, kinked, cracked or otherwise damaged hydraulic components. Just because it isn't leaking today doesn't mean that it will not fail tomorrow.

Fluid escaping from a very small hole can almost be invisible. Do not check for leaks with your hand. Escaping fluid under pressure can have sufficient force to penetrate skin causing serious personal injury or even death. Leaks can be detected by passing a piece of cardboard or wood over the suspected leak and looking for discoloration. **IF injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.**

Should it become necessary to loosen or remove any hydraulic fittings, lines or reservoir cap, be sure to relieve all pressure by shutting of the engine and moving the control handle back and forth several times.

NEVER remove the cap from the hydraulic tank or reservoir while the unit is running. Hot oil under pressure could result in serious injury. See also **SAFETY PRECAUTIONS.**

The pressure relief valve on your splitter is preset at the factory. DO NOT adjust the valve. Only a qualified technician should perform this adjustment.

MAINTENANCE, STORAGE, AND TRANSPORTATION

WARNING: *DISCONNECT THE SPARK PLUG BEFORE PERFORMING ANY MAINTENANCE.*
Consult the operating and maintenance instructions of the engine manufacturer for engine care.

Always check the oil level of the hydraulic reservoir before operation. Operating without an adequate oil supply will cause severe damage to the pump. Fluid level should be maintained approximately 3"(7.6cm) below the fill hole and above the flat on the dipstick.

Periodically check that all nuts, bolts, screws, clamps and fittings are tight and secure.

To keep your splitter in top working condition perform all recommended maintenance procedures before you use your splitter.

If the wedge becomes dull or nicked a grinder or sharpening tool can be used to sharpen it.

Completely drain the fuel tank prior to storage. Always store gasoline in an approved, tightly sealed container. Store container in a dry, cool place with adequate ventilation. Keep fuel away from areas where fumes could contact open flame, pilot light or sparks.

When transporting or storing, ensure the splitter is tied down in a manner so that it cannot move in any direction. Make sure the splitter is in an upright position so there is no oil leakage.

Be aware of the environment when disposing of used petroleum products. Please dispose of used hydraulic fluid, engine oil and any by products from the maintenance of your splitter at approved recycling centers.

Should it become necessary to disassemble the unit for repair or replacement of parts, refer to the drawings and parts list on the following pages. Exercise extreme caution, as some parts are very heavy and will require sufficient persons or mechanical handling equipment.

Your Swisher Log Splitter has been produced with components designed specifically to this machine. Although standard springs, hardware ect. may look similar to parts used on other machinery, they may in some cases be made of a different construction and/or materials. All replacement parts must meet manufacturer's specifications.

The operation of any splitter can produce foreign objects to be thrown into the eyes, resulting in severe eye damage. Always wear certified safety glasses or wide-vision safety goggles over spectacles before starting any splitting machine and while operating such a machine.

The operation of any splitter produces sound waves that are damaging to the human ear. Ear protection is recommended.

SAFETY DECALS

Replace decals immediately if damaged.

NOTICE
HYDRAULIC FILL PLUG
Maintain level of hydraulic oil at 3" below the plug.
Recommended to use universal hydraulic oil
or Dextron II Transmission fluid.

OD12 – Hydraulic Fill Plug Decal

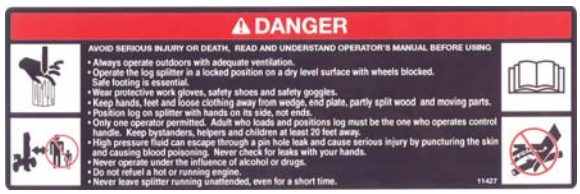
OD16 – Fuel Shut Off Decal

(NOT ALL MODELS)

Model Label

Danger/Attention

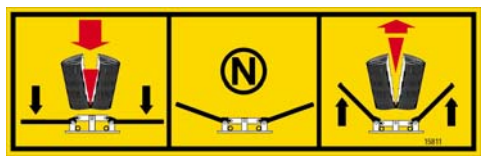
Read Owners Manual


DANGER
AVOID SERIOUS INJURY OR DEATH, READ AND UNDERSTAND OPERATOR'S MANUAL BEFORE USING
• Always operate outdoors with adequate ventilation.
• Operate the log splitter in a locked position on a dry level surface with wheels blocked. Safe footing is essential.
• Wear protective work gloves, safety shoes and safety goggles.
• Keep hands, feet and loose clothing away from wedge, end plate, partly split wood and moving parts.
• Position log on splitter with hands on its side, not ends.
• Only one operator permitted. Adult who loads and positions log must be the one who operates control handle. Keep bystanders, helpers and children at least 20 feet away.
• High pressure fluid can escape through a pin hole leak and cause serious injury by puncturing the skin and causing blood poisoning. Never check for leaks with your hands.
• Never operate under the influence of alcohol or drugs.
• Do not refuel a hot or running engine.
• Never leave splitter running unattended, even for a short time.
11427

11427 – LS Danger Decal

15776 - Danger:

Keep Clear of Moving Parts



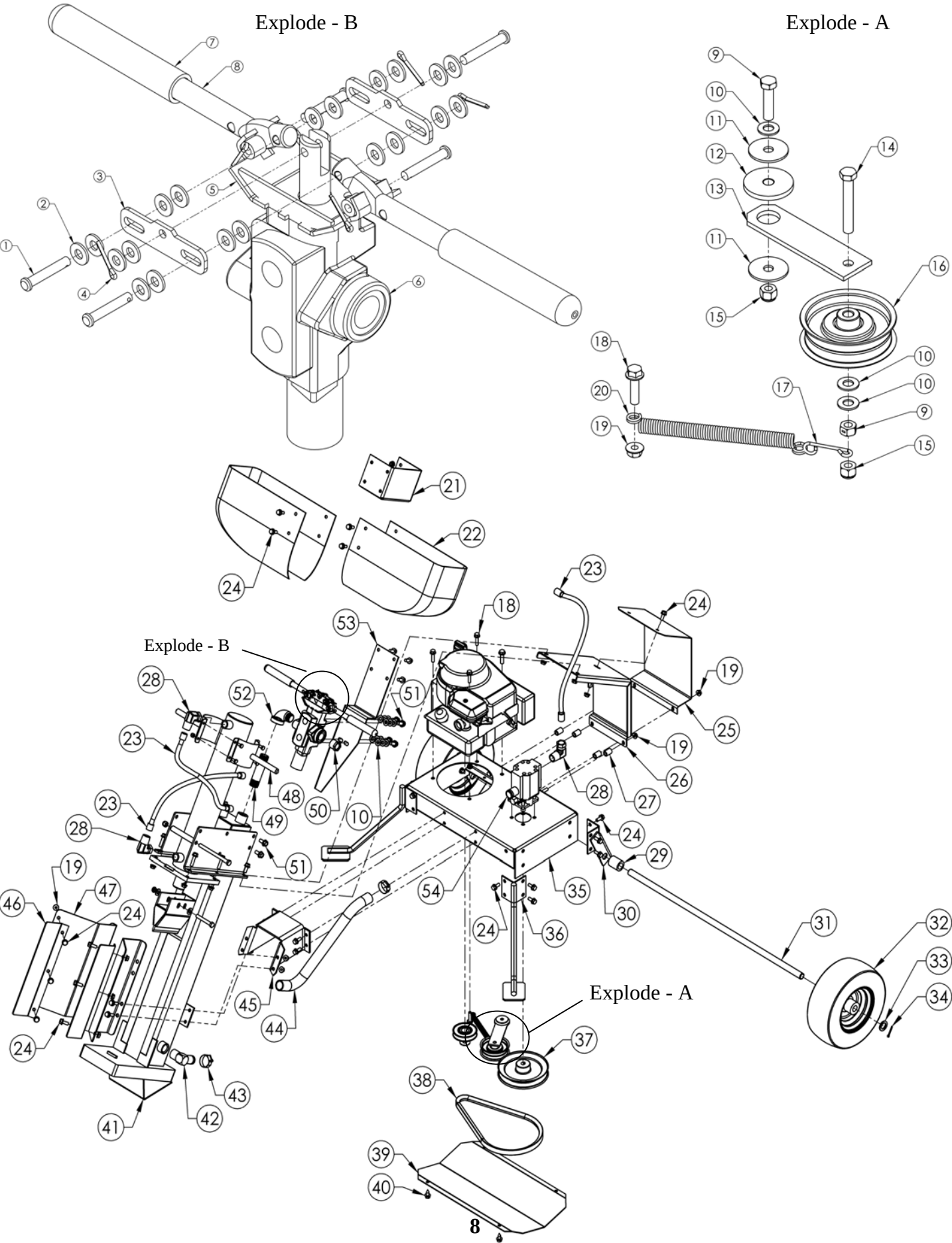
15811 – Valve Actuator Usage

15775 - Attention:

Wear Eye & Ear Protection

15777 - Danger:

To Be Operated By One Person Only.


Explode - B
Explode - A
Explode - B
Explode - A

SERVICE PARTS

Please have Model and Serial Numbers ready when ordering parts.
Color cannot be guaranteed upon service parts.

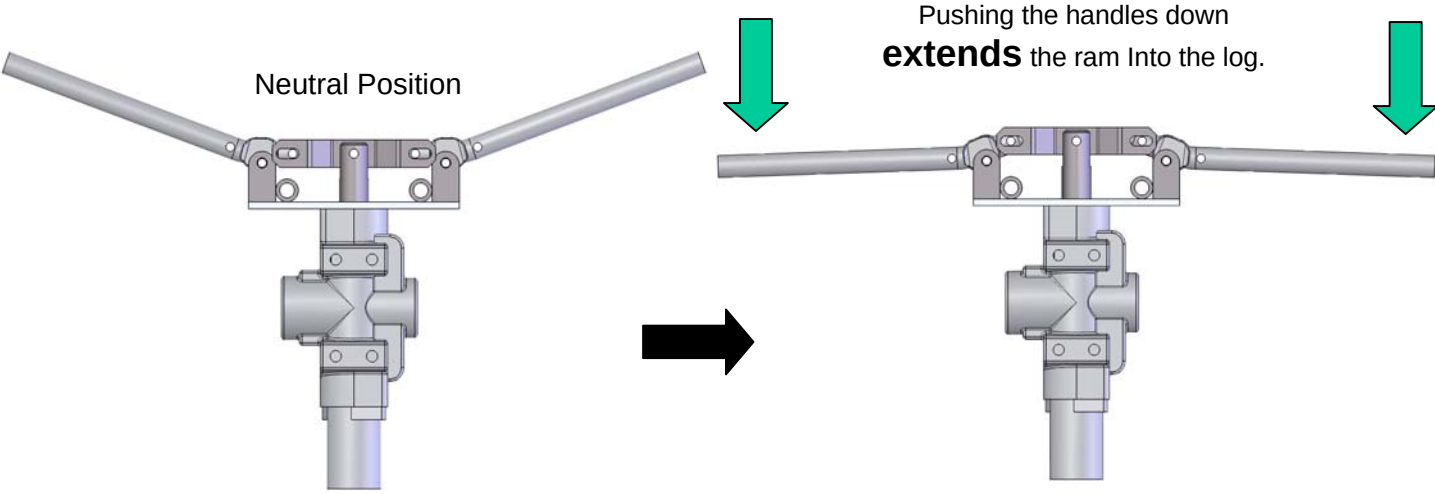
Item #	Description	Part #
1	Pin - Clevis, Std 1/4 X 1 1/2 ZY	NB518
2	Washer - SAE Flat 1/4 ZY	NB274
3	Bracket - Valve Actuator; LS412EC	15823
4	Pin - Cotter, 5/64 X 3/4 ZY	NB519
5	Valve Actuator - Weldment; LS412EC	15827
6	Valve Control Splitter	7287
7	Grip - Valve Handle	7425
8	Handle - Valve	7423
9	Bolt - 3/8-16 X 1 1/2 HCC GR5 ZY	NB107
10	Washer - SAE Flat 3/8 ZY Carbon Steel	NB272
11	Washer - Fender 3/8X1 1/2, Crbn Stl GR 2	10177
12	Bushing - Idler	6037
13	Plate - Idler; LS412	11563
14	Bolt - 3/8-16 X 2 1/2 HTC GR5 ZY	NB619
15	Nut - Nyloc 3/8-16 ZY	NB182
16	Pulley - Idler, OD-3.25", ID-3/8"	B527
17	Link - Wire, For Idler Arm	BRS6H
18	Bolt - Serr Flange, 5/16-18 X1 1/4ZY Gr5	NB253
19	Nut - Serr Flange 5/16-18 ZY Case Hrd	NB170
20	Spring - Clutch Rod; T60	682S
21	Guard Stiffner - Attachment; LS412EC	15817
22	Guard - Valve Actuator; LS412EC	16193
23	Hose - Pressure 24"; LS412	11559
24	Bolt - Serr Flange, 5/16-18 X 3/4 Gr 5	NB596
25	Heat Shield - LS412EC	16141
26	Heat Shield - LS412EC	15816
27	Spacer - 7/8"; LS412	11554
28	Elbow - 90 Deg. Male Pipe Swivel; LS412	11557
29	Spacer - 1.25 X .75 X 1.50	2655
30	Weldment - Axle Attach, Left; LS412EC	15812
31	Axle - LS412EC	15980
32	`Tire/Wheel Slick 4.10x3.5-43/4	3754
33	Washer - 13/16 X 1 1/4 X 1/8 ZY; Mild	NB195
34	Pin - Cotter, 1/8 X 1, Crbn Stl Ext Prng	NB126
35	Motorbase Weldment	15977
36	Support Stand Weldment; LS412EC	15810
37	Pulley - 6" Pump; LS412	11550
38	Belt - 33", For Engine; T60	690
39	Cover - Pulley System, Motorbase,LS412EC	16140
40	Screw - .312-18X.75	26X249
41	Weldment - Logsplitter Beam; LS412EC	16028
42	Pipe - 90 Degree Beaded Insert	11792
43	Clamp - Hose No. 16 (1 1/16" X 2")	LS4999
44	Hose - Supply, 1" ID X 16-7/8" Long	14921
45	Bracket - Beam	15634
46	Extension - Log Constraint	15806
47	Log Rest	15590
48	Cylinder Wrap - Handle Bar; LS412EC	15819
49	Nipple - 4"; LS412EC	16005
50	Bushing - Hex Reducer; LS412	11558
51	Bolt - Serr Flange, ZY 3/8-16X3/4 Gr5	NB780
52	Elbow - Fmle X Male 90 Deg, NPT X NPT	16004
53	Bracket - Valve Support; LS412EC	15818

NOTES:

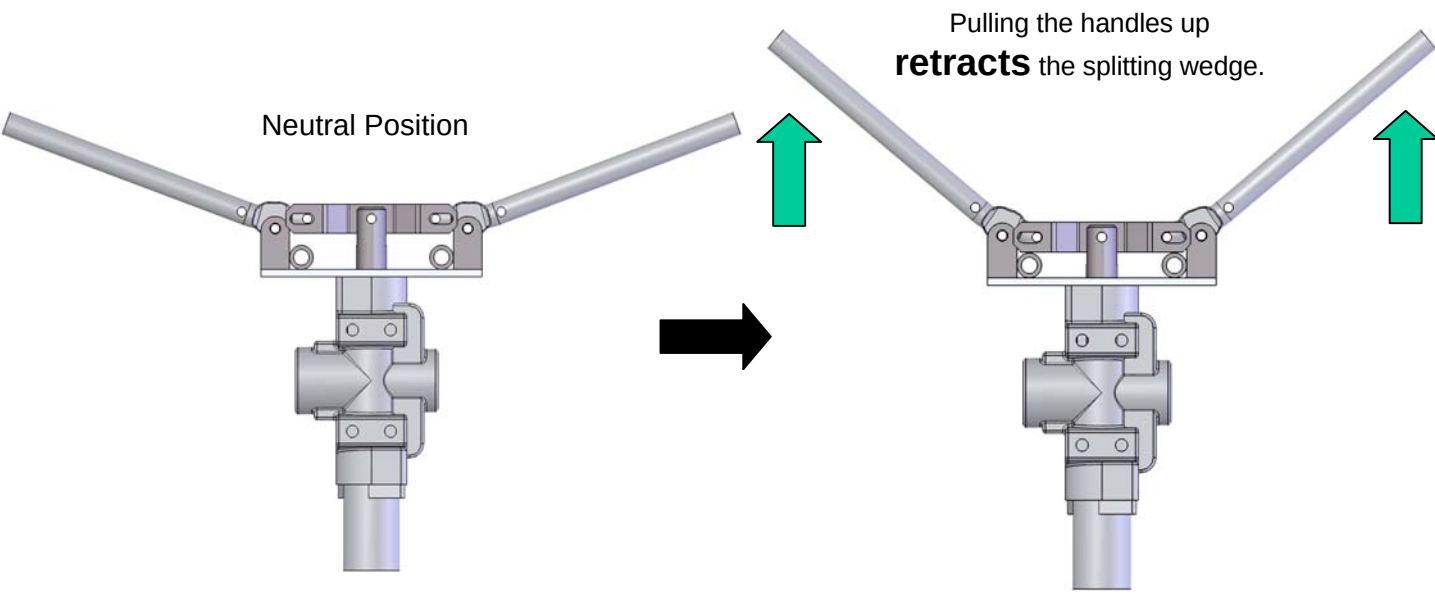
SPECIFICATIONS

LS412EC	
Splitting Force	12 Tons(10.9mt)
Engine	Briggs and Stratton 500 Series 158cc
Splitting Position	Tilt
Cylinder Size	3" X 18" (7.6cm x 45.7cm)
Pump	2 Stage with Heavy Duty Bearings
Pump Specs	11 gal/min (41.64 L/min)
Valve	Manual Return
Drive System	Belt Drive
Hydraulic Fluid Capacity	9-10 Quarts(8.5-9.5L)
Maximum Log Size	19" x Dia.15" (48.26cm xDia 38.1cm)
Tire Specs	10.5" x 2.75" x .781" (26.7cm x 6.9cm x 19.8cm)
Hydraulic Lines	Working Pressure: 3000psi(206.84BAR)
	Maximum Bursting Pressure: 12000psi(827.37BAR)
	Life Expectancy: 10 years
Low Pressure Hydraulic Return Lines	Minimum 250 psi(17.24BAR)
Oil	AW-32 Hydraulic Oil
Operating Temperature	0°F - 180°F (-17°C - 37°C)

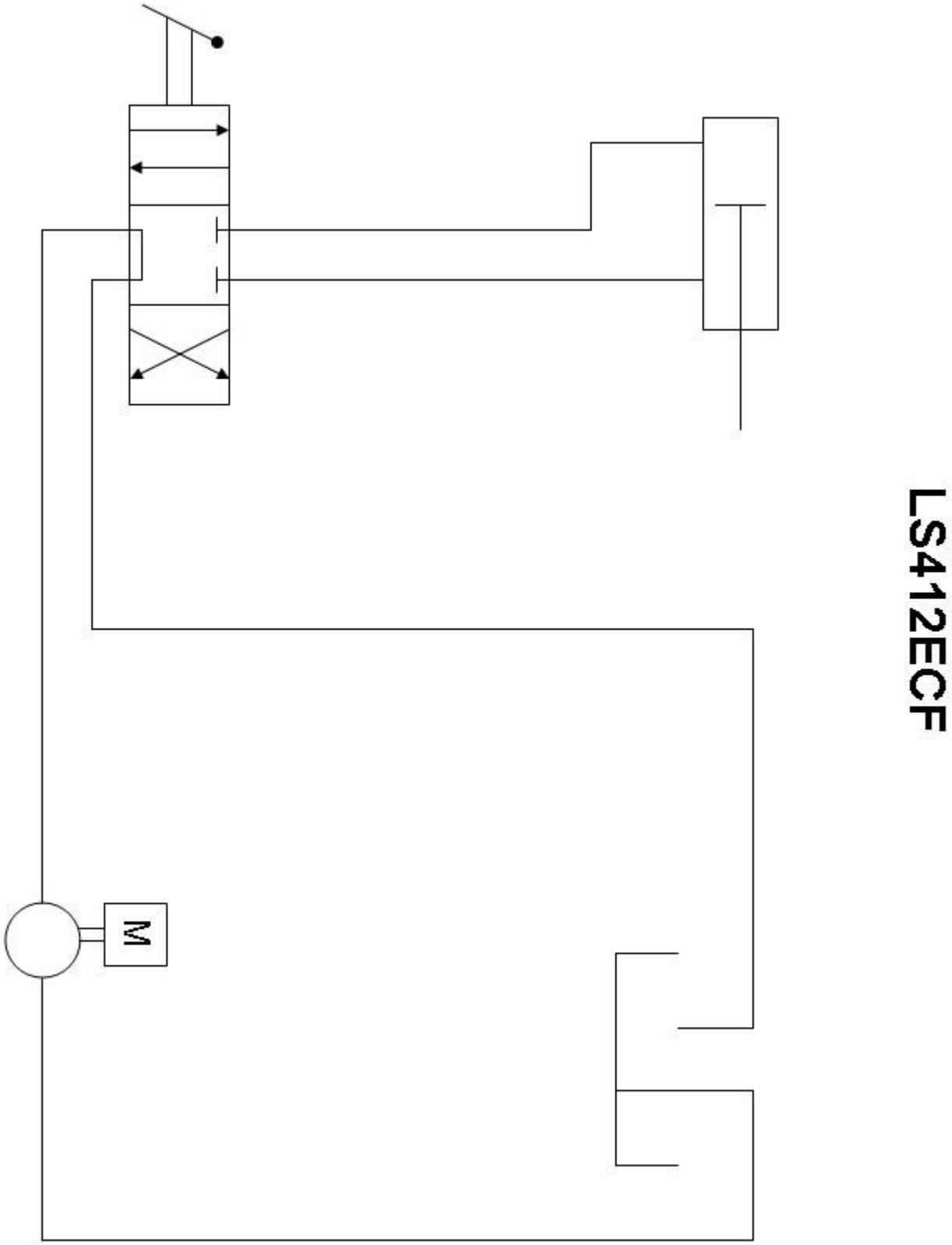
STEP ONE: EXTENDING THE RAM INTO THE LOG.



STEP TWO: RETRACTING THE RAM.



Hydraulic Schematic



DECLARATION OF CONFORMITY

The Manufacturer:
Swisher Mower and Machine, 1602 Corporate Dr, Warrensburg MO 64093, USA
Hereby declares that the Log splitter model

LS412EC

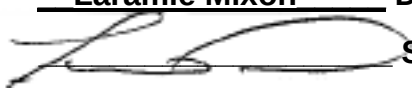
Complies with the provisions of the "MACHINERY' Directive (Directive 98/37/EC as amended) and the Regulations transposing it into law

Complies with the provisions of Directive 2004/108/EC determined according to ISO 14989;1998

Complies with Directive 2002/88 EC

Technical construction files are kept and maintained by ___James Connell___
Quality Assurance Manager

Warrensburg, MO 2008.09.15 **__Laramie Mixon_____ Director of Engineering**

(Place and date of issue)  **Signature**

(Name and job function of authorizing person)

Declared vibration emission values in accordance with Directive 98/37/EC.
Vibration Emission according to BS EN 1032: @ 3600 RPM (no load1) 1.36 m/s²

Declared airborne sound power level of 104 dB(A) determined according to EN ISO 3744;1995 Sound Pressure Level at Operator position of 89 dB(A). Determined according to EN ISO 11201;1997

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MODEL NO. LS412EC

LOG SPLITTER

HOW TO ORDER REPAIR PARTS:

Each Log Splitter has its own serial number. Each engine has its own serial number. The serial number for the Log Splitter will be found on the right hand side of the hydraulic oil reservoir. The serial number for the engine will be found on the top of the blower fan housing.
All Log Splitter parts listed herein may be ordered directly from Swisher Mower & Machine Co. Inc., your nearest Swisher dealer, or from our website.
All engine parts may be ordered from the nearest dealer of the engine supplied with your log splitter. Parts subject to change without notice.

WHEN ORDERING PARTS, PLEASE HAVE THE FOLLOWING INFORMATION AVAILABLE:

* PRODUCT – SWISHER LOG SPLITTER
* SERIAL NUMBER - _____
* MODEL NUMBER - _____
* ENGINE MODEL NUMBER - _____
  TYPE - _____
* PART NUMBER
* PART DESCRIPTION

www.swisherinc.com
TELEPHONE - 1-800-222-8183
FAX - 1-660-747-8650

SWISHER MOWER & MACHINE CO. INC.
1602 CORPORATE DRIVE
WARRENSBURG, MO 64093